REMARKS

Claims 1-3, 8-16, 19, 20, and 22-27 are pending in the present application. Claims 1-5 and 8-21 were previously pending. By the present amendment, claims 5, 17, 18, and 21 have been cancelled. Applicants reserve the right to prosecute the subject matter of these claims in an application that claims priority to the present application. Claims 22-27 have been added. Support for claims 22 and 25 can be found in paragraph 14. Support for claims 23 and 26 can be found in paragraph 9. Support for claims 24 and 27 can be found in paragraph 27. Claims 1 and 19 have been amended to delete a Bingham fluid. Applicants reserve the right to prosecute claims to a Bingham fluid in an application that claims priority to the present application.

Summary of Independent Claims

The subject matter of claims 1 and 19 is directed to devices and methods for delivering a therapeutic agent to a target site in the body. To ensure retention of the therapeutic in the target site yet allow easy passage of the therapeutic through a delivery device, a shear thickening fluid having therapeutic properties is loaded in the delivery device and the fluid is exposed to a viscosity adjuster. The viscosity adjuster affects the shear stress or shear rate of the fluid to change the viscosity of the fluid. The viscosity of a shear thickening fluid, a specific type of non-Newtonian fluid, increases as the shear stress or shear rate in the shear thickening fluid increases.

Accordingly, if a shear thickening fluid having therapeutic properties is delivered via a delivery device, the solid content of the fluid is such that the fluid easily passes through the delivery device. Prior to exiting the device and at an appropriate distance proximal to the site of injection in the target site, the fluid is exposed to the viscosity adjuster in the channel of the delivery device. This increases the shear stress or shear rate in the fluid resulting in an increase in the viscosity of the fluid. The fluid is then injected into a target site, where, because of the increased viscosity of the fluid, retention of the therapeutic is enhanced. (See paragraph 9).

Rejection of Claims Under 35 U.S.C. 102 by Zarate

Claims 1-3 and 19-20 stand rejected for allegedly being anticipated by U.S. Patent No. 5,662,619 to Zarate (Zarate). Applicants traverse this rejection at least because Zarate does not describe a shear thickening fluid. The Examiner concludes that blood acts as a Bingham fluid. A Bingham fluid is not presently recited by claims 1 and 19. Accordingly, Applicants request the withdrawal of this rejection.

At least further with respect to claims 23, 24, 26, and 27, Zarate also does not disclose a shear-thickening fluid pre-loaded with a therapeutic, let alone preloaded with a pharmaceutically active agent. Rather, Zarate describes a dialysis needle through which blood flows.

Rejection of Claims Under 35 U.S.C. 102 by Chan

Claim 1-3 and 19-20 stand rejected for allegedly being anticipated by U.S. Patent No. 6,409,972 to Chan (Chan). Applicants traverse this rejection at least because Chan does not describe a shear thickening fluid. The Examiner concludes that bone cement acts as a Bingham fluid but a Bingham fluid is not recited by claims 1 and 19. Furthermore, the Examiner presents no evidence or line or reasoning to show that a bone cement is a shear thickening agent, as that term is known in the art.

At least further with respect to claims 23, 24, 26, and 27, Chan also does not disclose a shear-thickening fluid pre-loaded with a therapeutic, let alone preloaded with a pharmaceutically active agent. Rather, Chan describes a polymer bone cement without any mention of adding a drug thereto. Regarding claims 22 and 25, the device of Chan as illustrated in Figure 4, has a "plurality of static mixing vanes 71-75 consecutively positioned along the longitudinal axis of the housing 624" and not just at the distal end, as required by claims 22 and 25 if such mixing vanes are being interpreted as viscosity adjustors.

Rejection of Claims Under 35 U.S.C. 102 by Antanavich

Claim 1-3 and 19-20 stand rejected for allegedly being anticipated by U.S. Patent No. 6,409,972 to Chan (Chan). Applicants traverse this rejection at least because Antanavich does not describe a shear thickening fluid. The Examiner concludes that fibrin cement acts as a Bingham fluid but a Bingham fluid is not presently recited by

claims 1 and 19. Further, the Examiner presents no evidence or line of reasoning that a fibrin is a shear thickening agent, as that term is known in the art.

At least further with respect to claims 23, 24, 26, and 27, Antanavich also does not disclose a shear-thickening fluid pre-loaded with a therapeutic, let alone preloaded with a pharmaceutically active agent. Rather, Antanavich describes thrombin and fibrinogen components and makes no mention of either of these fluids being pre-loaded with a therapeutic.

CONCLUSION

It is respectfully submitted that the present application is now in condition for allowance, which action is respectfully requested. The Examiner is invited to contact Applicants' representative to discuss any issue that would expedite allowance of the subject application.

Any fees for extension(s) of time or additional fees required in connection with the filing of this response, are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is authorized to charge any such required fees or to credit any overpayment to Kenyon & Kenyon's Deposit Account No. 11-0600.

Respectfully submitted,
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